CONEXER

DIGITAL MODULATOR DMSD02
TWIN AV TO DVB-T ENCODER/MODULATOR

USER MANUAL

Congratulations on your purchase of the DMSD02

This 'state of the art' product, is a digital encoder. The video and audio inputs are taken from composite audio/video on RCA connectors from the source device. The RF output is selectable and configured as a DVB-T modulator.

Configuration is made through Windows based USB software which can be downloaded from our website: www.antiference.co.uk/conexer-dvbt-modulators and select the '**downloads'** tab.

CONTENTS

1 SAFETY CONSIDERATIONS

1.1 Connecting to the mains supply
This product has to be connected to the mains supply. If there is the slightest doubt concerning the type of connection available on the installation, please contact your supplier of electricity. Before carrying out maintenance operation or modification of the installation, the modulator has to be disconnected. Remark : only use the supplied power adaptor.

1.2 Over Voltage
An over voltage on the mains supply, can cause short circuits or fire. Never overload the power lines.

1.3 Liquids
This module should be protected from splashes. Please assure yourself that no containers containing liquids are placed on this module. Also be aware of other persons splashing liquids on the module.

1.4 Cleaning
Disconnect the module before cleaning. Use only a damp cloth without solvents.

1.5 Ventilation
In order to assure an adequate air circulation and to prevent overheating, the ventilation holes should not be obstructed. The module may not be installed in a hermetically sealed environment. Other electronic products or heat producing items may not be placed upon or near the module.

1.6 Accessories
The use of accessories not manufactured by the manufacturer can cause damage to the module.

1.7 Installation of the module
The module must be installed in a place well protected from direct sunlight. All measures have to be taken to avoid installation in humid or sunny places. Do not install near heating elements or other devices producing heat. Assure yourself that the module is placed at least 10 cm from other equipment which is susceptible to electromagnetic radiation. Do not install the module on unstable items, a fall can cause physical or material damage. Always ensure the module is mounted vertically and not on its side.

1.8 - Location of the module

Leave a minimum pace of at least 15cm above and below the product to guarantee an optimal ventilation. The module should be mounted to assure a maximum natural ventilation. The module should be fixed to a wall using the wall fixings on the module.
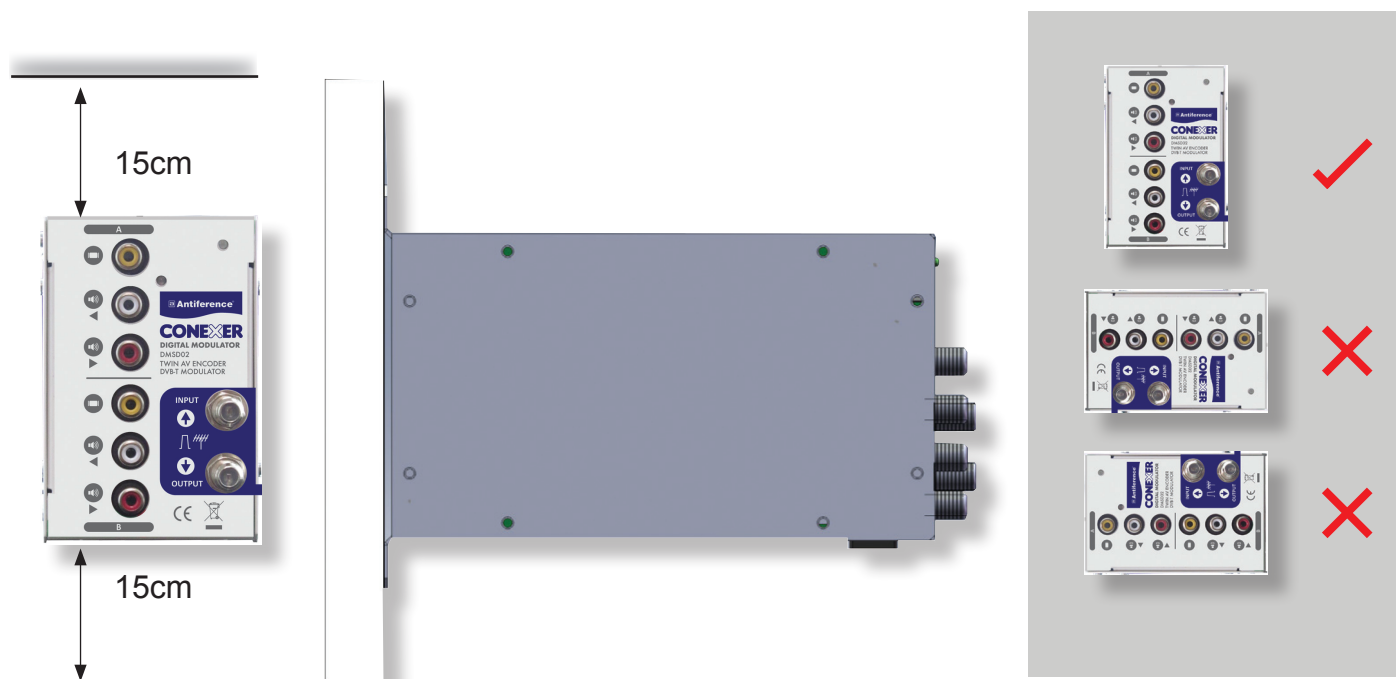
2 - Description of the different elements

C1	Power supply input of the modulator (5 VDC / 4 A)
C2	USB input (for programming the DMSD02 by PC)
C3	Video A input
C4	Audio left input
C5	Audio right input
C6	Video B input
C7	Audio left input
C8	Audio right input
C9	DVB-T loop input
C10	DVB-T output
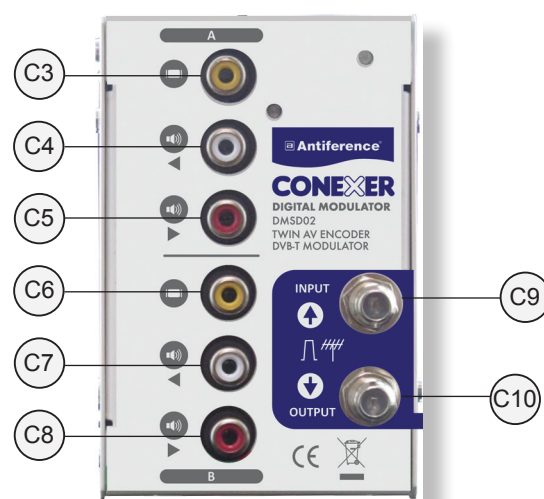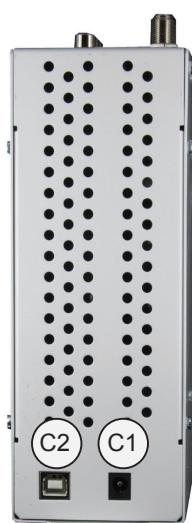
Antiference

## 3 - Installation of the operating software

3.1 - Downloading and installing the programming software

The DMSD02 is programmable via the DVTiFace which is a Windows based USB software which can be downloaded from www.antiference.co.uk/conexer-dvbt-modulators
The software files are located in a zip file on the 'downloads' tab on the product page.
The DTViFace supports WindowsXP, Vista & Windows 7 (32bit) and Windows 7 (64bit)
Follow the instructions in the set up wizard to download the software from the website.

Install the software on your PC, generating a desktop icon if required, and connect the modulator via the USB cable (supplied) to your PC.
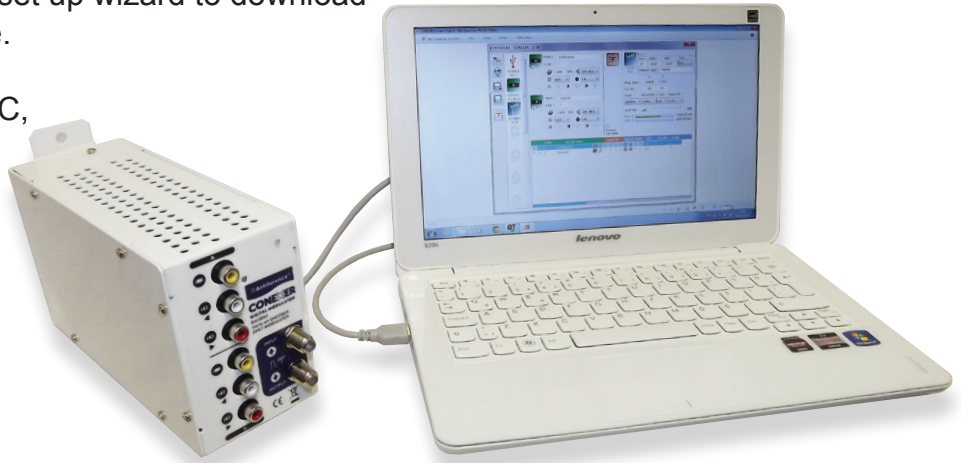
3.2 Powering Up

Power the modulator up with the PSU supplied. Once all the LED's on the front panel of the modulator have turned green, launch the DTViFace software. The start up screen will appear:
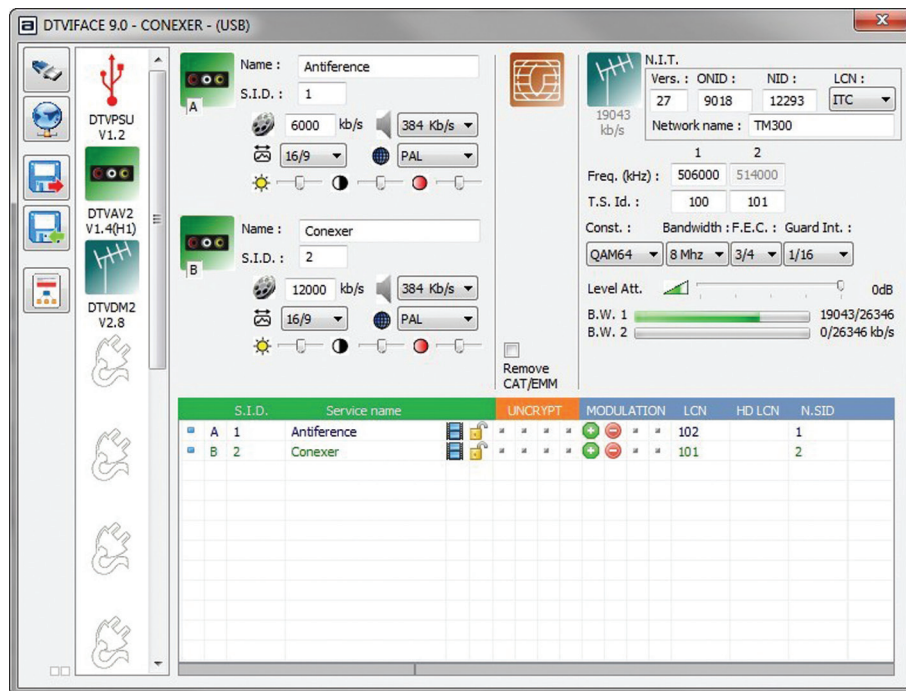
Select the DTVAV2 composite RCA icon to navigate the programming screen.

4 - Installing and programming the module using a PC

4.1 - Accessing the parameters on a PC

After downloading and installing the DTViFace software, open the programme and select the DMSD02 symbol to get access to the parameters of the DMSD02 module. The following will appear.

4.2 - Setting the input parameters on the DMSD02 module.
Both the A and B inputs can have their individual parameters set:

- **Name** - give the programme name.

- **S.I.D.**- enter the service ID number

- **Bit Rate Video** - select a value between
  4000 and 120000 kb/s

- **Screen Format** - Select 4/3 or 16/9

- **PAL or NTSC -** select the region

- **Brightness** - Set the slider control to adjust

- **Contrast** - Set the slider control to adjust

- **Saturation** - Set the slider control to adjust
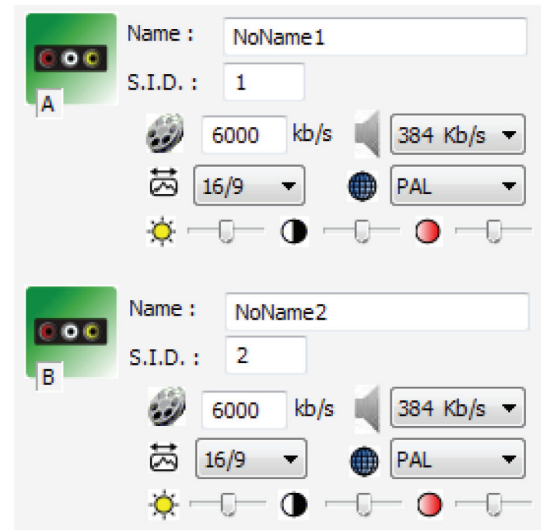
- **Programme List** - The two programmes will appear in the programme list.

- **Programme Activation** -

  - The programme is activated

  - The programme is not activated

4.3 - Setting the N.I.T. parameters of the DMSD02 modulator.
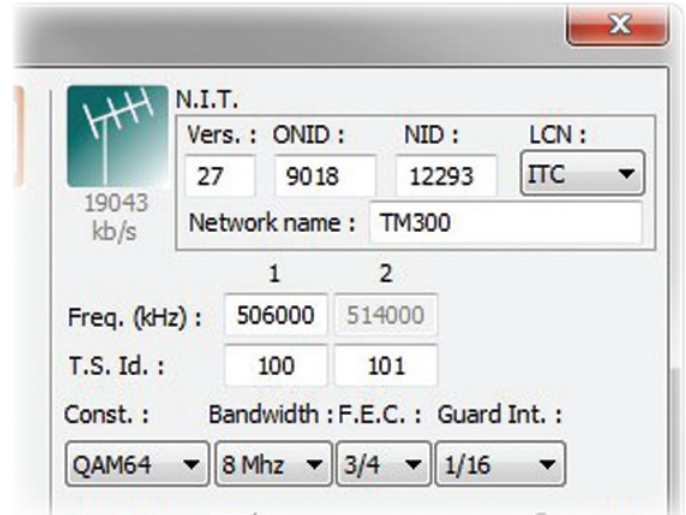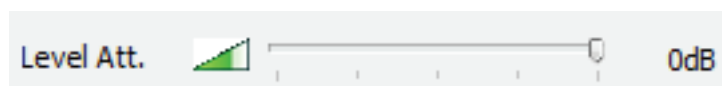The following parameters can be set on the DMS02 Modulator:

• **Version** - enter the N.I.T version.

• **ONID** - enter the decimal code for the original Network ID, This is the country where you are located.

• **NID** - enter the network ID.

• **Network Name** - enter the network name.

• **Frequency -** Under the N.I.T. Parameters you will find the output frequency of the modulator. The DMSD02 has a secondary adjacent output channel, but the output frequency is set by the first channel. The frequency of the other channel is automatically adjusted and cannot be changed by the user. This secondary channel is present to add services to if required. The user should ensure that 2 adjacent channels are available in the band for the modulator in the location where the output is to be tuned to.

• **T.S. ID -** For each channel, a T.S. ID should be assigned.

• **Constellation -** Select the 'Const.' control to adjust

• **Bandwidth -** Select the 'Bandwidth' control to adjust

• **F.E.C. -** Select the 'F.E.C.' control to adjust

• **Guard Interval** - Select the 'Guard Interval' control to adjust

• **Output Level** - An internal attenuator allows to lower the output level of the modulator. The attenuator can be adjusted between 0dB (max output) and -20dB.

Antiference

5 - Using High Definition HD LCN

In some systems you may want to broadcast a version of a programme in Standard Definition (SD) at the same time as High Definition (HD). With HD LCN numbering, you can force HD Television sets to follow the HD LCN numbering and SD Television sets to follow the LCN numbering for those programs which are transmitted in duplicate.

For example: You want to broadcast a BBC television programme in SD version as well as in HD. Application of HD LCN would be:

BBC1	LCN: 5	HDLCN: 55
BBC1HD	LCN: 55	HDLCN: 5

Television sets with the HD tuner will now put BBC1 HD on number 5 and BBC1 on channel 55
Television sets without the HD tuner will now put BBC1 HD on number 55 and BBC1 on channel 5

6 - Occupied Bandwidth

The terrestrial Aerial symbol features a number beneath that signifies the total occupied bandwidth of the modulator. This number should not exceed the maximum available bandwidths of the modulator. The maximum available bandwidth is calculated on the maximum available bandwidth per channel x the number of channels. The maximum available bandwidth per channel is depending on the modulation parameters (Constellation / Bandwidth / F.E.C. / Guard interval). (See technical specification list)

For example: for a DMSD02 modulator, the maximum available bandwidth is 2 x 31.6Mbit/s = approx. 63.2Mbit/s.

The occupied bandwidth of each channel in the modulator is showed by bar graphs in the modulator window.

B.W. 1	19906/31667
B.W. 2	14016/31669
B.W. 3	30821/31667
B.W. 4	30627/31667
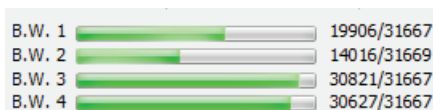
The occupied bandwidth will increase as the number of programmes added to that channel is increased. It also depends on the bandwidth of each individual programme. Please avoid overloading a channel as this will lead to defects in the programmes.

7 - Technical Specifications

Input (x2)	Video	CVBS
	Input level	0.7....1.4 Vpp
	Impedance	75 ohm
	Standards	PAL/NTSC
	Audio input	0.5-2.5Vpp
Compression	Video	MPEG2
	Video bitrate	4...12 Mb/s
	Audio	MPEG1, Layer II
DVB-S2	Audio bitrate	128, 192, 256, 320, 384 kb/s

DVBT output (adjacent) (DTVDM2 = 2 channels)	Attenuation	> 95 dBμV
	Attenuation	0 - 20 dB
	Insertion loss	< 2 dB
	Output frequency	47-862 MHz
	Constellation	QPSK/16QAM/64QAM
	FEC	1/2, 2/3, 3/4, 5/9, 7/8
	Guard interval	1/4, 1/8, 1/16, 1/32
	Mode	2K

7.1 Appendix A - Constellation and maximum Bit Rate

ModulationC	ode Rate	Guard 1/4	Guard 1/8G	uard 1/16	Guard 1/32
		Mb/s	Mb/s	Mb/s	Mb/s
QPSK	1/24	.976471	5.529412	5.854671	6.032086
	2/36	.635294	7.372549	7.806228	8.042781
	3/47	.464706	8.294118	8.782007	9.048128
	5/6	8.294118	9.215686	9.757785	10.05348
	7/88	.708824	9.676471	10.24567	10.55617
16 QAM	1/29	.952941	11.05882	11.709341	12.06417
	2/3	13.27059	14.74510	15.61246	16.08556
	3/4	14.92941	16.58824	17.56401	18.09626
	5/6	16.58824	18.43137	19.51557	20.10695
	7/8	17.41765	19.35294	20.49135	21.11230
64 QAM	1/2	14.92941	16.58824	17.56401	18.0926
	2/3	19.90588	22.11765	23.41869	24.12834
	3/4	22.39412	24.88235	26.34602	27.14439
	5/6	24.88235	27.64706	29.27336	30.16043
	7/8	26.12647	29.02941	29.27336	31.66845

7.2 Appendix B - ONID original Network ID

Original Network ID	Original Network ID			
Range		Original_Network_Name	Original_Network_Operator	
Start (HEX)	End (HEX)			
.....				
0x2024	0x2024A	ustralian Digital Terrestrial Television	Australian Broadcasting Authority	
0x2028	0x2028A	ustrian Digital Terrestrial Television	ORS - Austrian Broadcasting Services	8232
0x2038	0x2038	Belgian Digital Terrestrial Television	BIPT	8248
0x209E	0x209E	Taiwanese Digital Terrestrial Television	Directorate General of Telecommunications	
0x20CB	0x20CBC	zech Republic Digital Terrestrial Television	Czech Digital Group	
0x20D0	0x20D0D	anish Digital Terrestrial Television	National Telecom Agency Denmark	
0x20E9	0x20E9	Estonian Digital Terrestrial Television	Estonian National Communications Board	
0x20F6	0x20F6	Finnish Digital Terrestrial Television	Telecommunicatoins Administratoin Centre, Finland	8438
0x20FA	0x20FAF	rench Digital Terrestrial Television	Conseil Superieur de l'AudioVisuel	8442
0x2114	0x2114	German Digital Terrestrial Television	IRT on behalf of the German DVB-T broadcasts	8468
0x2168	0x2168	Digital Terrestrial Network of Indonesia	Ministry of Communication and Information Technology of the Republic of Indonesia	
0x2174	0x2174	Irish Digital Terrestrial Television	Irish Telecommunications Regulator	
0x2178	0x2178	Israeli Digital Terrestrial Television	BEZEQ (The Israel Telecommunication Corp Ltd .)	
0x217C	0x217C	Italian Digital Terrestrial Television		8572
0x21AC	0x21ACD	TT - Latvian Digital Terrestrial Television	Electronic Communications Office	
0x2210	0x2210	Netherlands Digital Terrestrial Television	Nozema	8720
0x222A	0x222AD	TT - New Zealand Digial Terrestrial Television	TVNZ on behalf of Freeview New Zealand	
0x2242	0x2242	Norwegian Digital Terrestrial Television	Norwegian Regulator	
0x2260	0x2260	DTT - Philippines Digital Terrestrial Television	NTA (porivionally ABS-CBN)	
0x2268	0x2268	DTT Poland	Office of Electronic Communications	
0x22BE	0x22BE	Singapore Digital Terrestrial Television	Singapore Broadcasting Authority	
0x22BF	0x22BF	Telecommunications office of the Slovak republic	Telecommunications office of the Slovak republic	
0x22C1	0x22C1	DTT - Slovenian Digital Terrestrial Television	APEK	
0x22C6	0x22C6	DTT - South African Digital Terrestrial Television	South African Broadcasting Corporation Ltd. (SABC), pending formation of "DZONGA"	
0x22C7	0x22C7	DTT- Hungarian Digital Terrestrial Television	National Communications Authority, Hungary	
0x22C8	0x22C8	DTT- Portugal Digital Terrestrial Television	ANACOM- National Communications Authority	
0x22D4	0x22D4	Spanish Digital Terrestrial Television	"Spanish Broadcasting Regulator	8916
0x22F1	0x22F1	Swedish Digital Terrestrial Television	"Swedish Broadcasting Regulator "	8945
0x22F4	0x22F4	Swiss Digital Terrestrial Television	OFCOM	8948
0x233A	0x233A	UK Digital Terrestrial Television	Independent Television Commission	
.....				

8. Declaration of Conformity:

CE   We, ANTIFERENCE LIMITED herewith declare that the modulator CONEXER DMSD02 complies with all essential requirements and any other applicable conditions set forth on directive 1999/05/CE.

According to the WEEE (Waste Electrical and Electronic Equipment) EU Directive, do not dispose of this product as household waste or commercial waste. Waste electrical and electronic equipment should be appropriately collected and recycled as required by practices established for your country. For information on recycling of this product, please contact your local authorities, your household waste disposal service or the shop where you purchased the product.

Date of issue: January 2014

Antiference®